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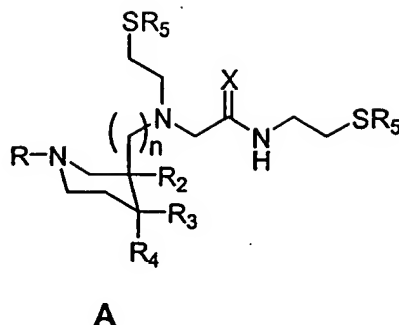
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We Claim:

1. A compound represented by A:



wherein

X represents O or (H)<sub>2</sub>;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>2</sub> represents H;

R<sub>3</sub> represents optionally substituted aryl or heteroaryl;

R<sub>4</sub> represents H;

R<sub>5</sub> represents independently for each occurrence H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl; and

n is 0, 1, or 2.

2. The compound of claim 1, wherein X represents O.
3. The compound of claim 1, wherein R represents alkyl.
4. The compound of claim 1, wherein R<sub>3</sub> represents optionally substituted phenyl.
5. The compound of claim 1, wherein R<sub>5</sub> represents H or aralkyl.
6. The compound of claim 1, wherein n is 1.
7. The compound of claim 1, wherein X represents O; and R represents alkyl.
8. The compound of claim 1, wherein X represents O; and R<sub>3</sub> represents optionally substituted phenyl.

9. The compound of claim 1, wherein X represents O; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.

10. The compound of claim 1, wherein X represents O; and n is 1.

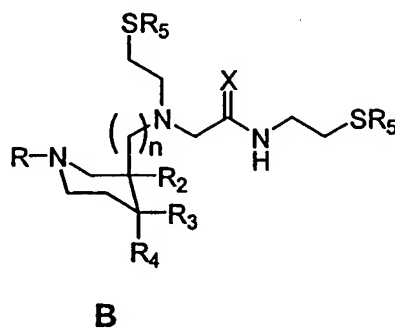
11. The compound of claim 1, wherein X represents O; R represents alkyl; and R<sub>3</sub> represents optionally substituted phenyl.

12. The compound of claim 1, wherein X represents O; R represents alkyl; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.

13. The compound of claim 1, wherein X represents O; R represents alkyl; R<sub>3</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.

14. The compound of claim 1, wherein X represents O; R represents methyl; R<sub>3</sub> represents 4-chlorophenyl; R<sub>5</sub> represents independently for each occurrence H or 4-methoxybenzyl; and n is 1.

15. A compound represented by B:



wherein

X represents O or (H)<sub>2</sub>;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>2</sub> represents H;

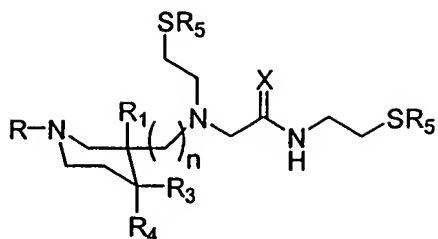
R<sub>3</sub> represents H;

R<sub>4</sub> represents optionally substituted aryl or heteroaryl;

R<sub>5</sub> represents independently for each occurrence H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxy carbonyl, or alkylaminocarbonyl; and

n is 0, 1, or 2.

16. The compound of claim 15, wherein X represents O.
17. The compound of claim 15, wherein R represents alkyl.
18. The compound of claim 15, wherein R<sub>4</sub> represents optionally substituted phenyl.
19. The compound of claim 15, wherein R<sub>5</sub> represents H or aralkyl.
20. The compound of claim 15, wherein n is 1.
21. The compound of claim 15, wherein X represents O; and R represents alkyl.
22. The compound of claim 15, wherein X represents O; and R<sub>4</sub> represents optionally substituted phenyl.
23. The compound of claim 15, wherein X represents O; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.
24. The compound of claim 15, wherein X represents O; and n is 1.
25. The compound of claim 15, wherein X represents O; R represents alkyl; and R<sub>4</sub> represents optionally substituted phenyl.
26. The compound of claim 15, wherein X represents O; R represents alkyl; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.
27. The compound of claim 15, wherein X represents O; R represents alkyl; R<sub>4</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.
28. The compound of claim 15, wherein X represents O; R represents methyl; R<sub>4</sub> represents 4-chlorophenyl; R<sub>5</sub> represents independently for each occurrence H or 4-methoxybenzyl; and n is 1.
29. A compound represented by C:



**C**

wherein

X represents O or (H)<sub>2</sub>;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>1</sub> represents H;

R<sub>3</sub> represents optionally substituted aryl or heteroaryl;

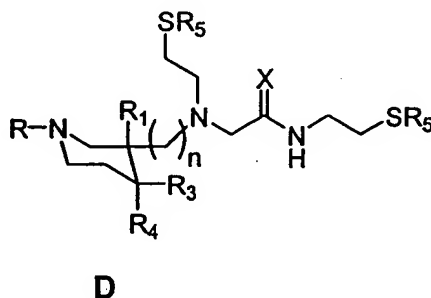
R<sub>4</sub> represents H;

R<sub>5</sub> represents independently for each occurrence H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl; and

n is 0, 1, or 2.

30. The compound of claim 29, wherein X represents O.
31. The compound of claim 29, wherein R represents alkyl.
32. The compound of claim 29, wherein R<sub>3</sub> represents optionally substituted phenyl.
33. The compound of claim 29, wherein R<sub>5</sub> represents H or aralkyl.
34. The compound of claim 29, wherein n is 1.
35. The compound of claim 29, wherein X represents O; and R represents alkyl.
36. The compound of claim 29, wherein X represents O; and R<sub>3</sub> represents optionally substituted phenyl.
37. The compound of claim 29, wherein X represents O; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.

38. The compound of claim 29, wherein X represents O; and n is 1.
39. The compound of claim 29, wherein X represents O; R represents alkyl; and R<sub>3</sub> represents optionally substituted phenyl.
40. The compound of claim 29, wherein X represents O; R represents alkyl; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.
41. The compound of claim 29, wherein X represents O; R represents alkyl; R<sub>3</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents independently for each occurrence H or aralkyl.
42. The compound of claim 29, wherein X represents O; R represents methyl; R<sub>3</sub> represents 4-chlorophenyl; R<sub>5</sub> represents independently for each occurrence H or 4-methoxybenzyl; and n is 1.
43. A compound represented by D:



wherein

X represents O or (H)<sub>2</sub>;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>1</sub> represents H;

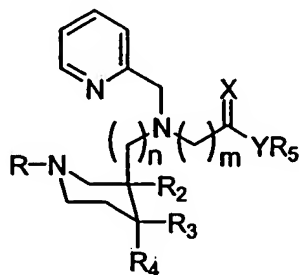
R<sub>3</sub> represents H;

R<sub>4</sub> represents optionally substituted aryl or heteroaryl;

R<sub>5</sub> represents independently for each occurrence H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl; and

n is 0, 1, or 2.

44. The compound of claim 43, wherein X represents O.
45. The compound of claim 43, wherein R represents alkyl.
46. The compound of claim 43, wherein  $R_4$  represents optionally substituted phenyl.
47. The compound of claim 43, wherein  $R_5$  represents H or aralkyl.
48. The compound of claim 43, wherein n is 1.
49. The compound of claim 43, wherein X represents O; and R represents alkyl.
50. The compound of claim 43, wherein X represents O; and  $R_4$  represents optionally substituted phenyl.
51. The compound of claim 43, wherein X represents O; and  $R_5$  represents independently for each occurrence H or aralkyl.
52. The compound of claim 43, wherein X represents O; and n is 1.
53. The compound of claim 43, wherein X represents O; R represents alkyl; and  $R_4$  represents optionally substituted phenyl.
54. The compound of claim 43, wherein X represents O; R represents alkyl; and  $R_5$  represents independently for each occurrence H or aralkyl.
55. The compound of claim 43, wherein X represents O; R represents alkyl;  $R_4$  represents optionally substituted phenyl; and  $R_5$  represents independently for each occurrence H or aralkyl.
56. The compound of claim 43, wherein X represents O; R represents methyl;  $R_4$  represents 4-chlorophenyl;  $R_5$  represents independently for each occurrence H or 4-methoxybenzyl; and n is 1.
57. A compound represented by E:



E

wherein

X represents O or S;

Y represents O or S;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>2</sub> represents H;

R<sub>3</sub> represents optionally substituted aryl or heteroaryl;

R<sub>4</sub> represents H;

R<sub>5</sub> represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

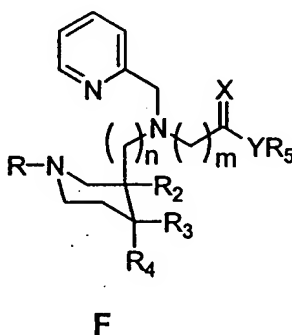
m is 1 or 2; and

n is 0, 1, or 2.

58. The compound of claim 57, wherein X represents O.
59. The compound of claim 57, wherein Y represents O.
60. The compound of claim 57, wherein R represents alkyl.
61. The compound of claim 57, wherein R<sub>3</sub> represents optionally substituted phenyl.
62. The compound of claim 57, wherein R<sub>5</sub> represents H, alkyl, or aralkyl.
63. The compound of claim 57, wherein m is 1.
64. The compound of claim 57, wherein n is 1.
65. The compound of claim 57, wherein X represents O; and Y represents O.
66. The compound of claim 57, wherein X represents O; and R represents alkyl.
67. The compound of claim 57, wherein X represents O; and R<sub>3</sub> represents optionally substituted phenyl.
68. The compound of claim 57, wherein X represents O; and R<sub>5</sub> represents H, alkyl, or aralkyl.



69. The compound of claim 57, wherein X represents O; and m is 1.
70. The compound of claim 57, wherein X represents O; and n is 1.
71. The compound of claim 57, wherein X represents O; Y represents O; R represents alkyl; and R<sub>3</sub> represents optionally substituted phenyl.
72. The compound of claim 57, wherein X represents O; Y represents O; R represents alkyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
73. The compound of claim 57, wherein X represents O; Y represents O; R represents alkyl; R<sub>3</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
74. The compound of claim 57, wherein X represents O; Y represents O; R represents methyl; R<sub>3</sub> represents 4-chlorophenyl; R<sub>5</sub> represents ethyl; m is 1; and n is 1.
75. A compound represented by F:



wherein

- X represents O or S;
- Y represents O or S;
- R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;
- R<sub>2</sub> represents H;
- R<sub>3</sub> represents H;
- R<sub>4</sub> represents optionally substituted aryl or heteroaryl;

R<sub>5</sub> represents H, alkyl, alkoxyl, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

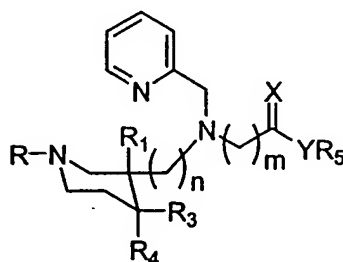
m is 1 or 2; and

n is 0, 1, or 2.

76. The compound of claim 75, wherein X represents O.
77. The compound of claim 75, wherein Y represents O.
78. The compound of claim 75, wherein R represents alkyl.
79. The compound of claim 75, wherein R<sub>4</sub> represents optionally substituted phenyl.
80. The compound of claim 75, wherein R<sub>5</sub> represents H, alkyl, or aralkyl.
81. The compound of claim 75, wherein m is 1.
82. The compound of claim 75, wherein n is 1.
83. The compound of claim 75, wherein X represents O; and Y represents O.
84. The compound of claim 75, wherein X represents O; and R represents alkyl.
85. The compound of claim 75, wherein X represents O; and R<sub>4</sub> represents optionally substituted phenyl.
86. The compound of claim 75, wherein X represents O; and R<sub>5</sub> represents H, alkyl, or aralkyl.
87. The compound of claim 75, wherein X represents O; and m is 1.
88. The compound of claim 75, wherein X represents O; and n is 1.
89. The compound of claim 75, wherein X represents O; Y represents O; R represents alkyl; and R<sub>4</sub> represents optionally substituted phenyl.
90. The compound of claim 75, wherein X represents O; Y represents O; R represents alkyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
91. The compound of claim 75, wherein X represents O; Y represents O; R represents alkyl; R<sub>4</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.

92. The compound of claim 75, wherein X represents O; Y represents O; R represents methyl; R<sub>4</sub> represents 4-chlorophenyl; R<sub>5</sub> represents ethyl; m is 1; and n is 1.

93. A compound represented by G:



G

wherein

X represents O or S;

Y represents O or S;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxy carbonyl, or alkylaminocarbonyl;

R<sub>1</sub> represents H;

R<sub>3</sub> represents optionally substituted aryl or heteroaryl;

R<sub>4</sub> represents H;

R<sub>5</sub> represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxy carbonyl, or alkylaminocarbonyl;

m is 1 or 2; and

n is 0, 1, or 2.

94. The compound of claim 93, wherein X represents O.

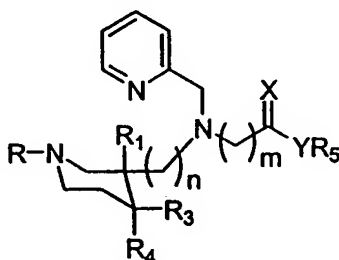
95. The compound of claim 93, wherein Y represents O.

96. The compound of claim 93, wherein R represents alkyl.

97. The compound of claim 93, wherein R<sub>3</sub> represents optionally substituted phenyl.

98. The compound of claim 93, wherein R<sub>5</sub> represents H, alkyl, or aralkyl.

99. The compound of claim 93, wherein m is 1.
100. The compound of claim 93, wherein n is 1.
101. The compound of claim 93, wherein X represents O; and Y represents O.
102. The compound of claim 93, wherein X represents O; and R represents alkyl.
103. The compound of claim 93, wherein X represents O; and R<sub>3</sub> represents optionally substituted phenyl.
104. The compound of claim 93, wherein X represents O; and R<sub>5</sub> represents H, alkyl, or aralkyl.
105. The compound of claim 93, wherein X represents O; and m is 1.
106. The compound of claim 93, wherein X represents O; and n is 1.
107. The compound of claim 93, wherein X represents O; Y represents O; R represents alkyl; and R<sub>3</sub> represents optionally substituted phenyl.
108. The compound of claim 93, wherein X represents O; Y represents O; R represents alkyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
109. The compound of claim 93, wherein X represents O; Y represents O; R represents alkyl; R<sub>3</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
110. The compound of claim 93, wherein X represents O; Y represents O; R represents methyl; R<sub>3</sub> represents 4-chlorophenyl; R<sub>5</sub> represents ethyl; m is 1; and n is 1.
111. A compound represented by H:



H

wherein

X represents O or S;

Y represents O or S;

R represents H, alkyl, alkoxyl, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>1</sub> represents H;

R<sub>3</sub> represents H;

R<sub>4</sub> represents optionally substituted aryl or heteroaryl;

R<sub>5</sub> represents H, alkyl, alkoxyl, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

m is 1 or 2; and

n is 0, 1, or 2.

112. The compound of claim 111, wherein X represents O.
113. The compound of claim 111, wherein Y represents O.
114. The compound of claim 111, wherein R represents alkyl.
115. The compound of claim 111, wherein R<sub>4</sub> represents optionally substituted phenyl.
116. The compound of claim 111, wherein R<sub>5</sub> represents H, alkyl, or aralkyl.
117. The compound of claim 111, wherein m is 1.
118. The compound of claim 111, wherein n is 1.
119. The compound of claim 111, wherein X represents O; and Y represents O.
120. The compound of claim 111, wherein X represents O; and R represents alkyl.
121. The compound of claim 111, wherein X represents O; and R<sub>4</sub> represents optionally substituted phenyl.
122. The compound of claim 111, wherein X represents O; and R<sub>5</sub> represents H, alkyl, or aralkyl.
123. The compound of claim 111, wherein X represents O; and m is 1.
124. The compound of claim 111, wherein X represents O; and n is 1.

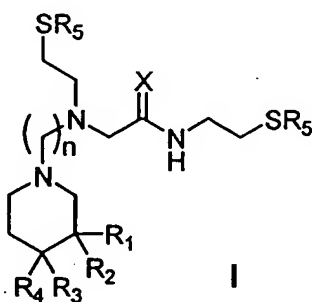
125. The compound of claim 111, wherein X represents O; Y represents O; R represents alkyl; and R<sub>4</sub> represents optionally substituted phenyl.

126. The compound of claim 111, wherein X represents O; Y represents O; R represents alkyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.

127. The compound of claim 111, wherein X represents O; Y represents O; R represents alkyl; R<sub>4</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.

128. The compound of claim 111, wherein X represents O; Y represents O; R represents methyl; R<sub>4</sub> represents 4-chlorophenyl; R<sub>5</sub> represents ethyl; m is 1; and n is 1.

129. A compound represented by I:



wherein

X represents O or (H)<sub>2</sub>;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxy carbonyl, or alkylaminocarbonyl;

R<sub>1</sub> represents -C(O)OR;

R<sub>2</sub> represents H;

R<sub>3</sub> represents optionally substituted aryl or heteroaryl;

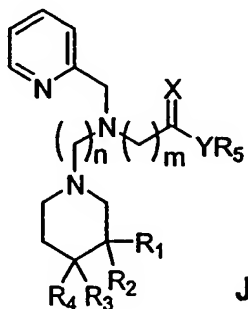
R<sub>4</sub> represents H;

R<sub>5</sub> represents independently for each occurrence H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxy carbonyl, or alkylaminocarbonyl; and

n is 1, 2, 3, 4, or 5.

130. The compound of claim 129, wherein X represents O.

131. The compound of claim 129, wherein R represents alkyl.
132. The compound of claim 129, wherein  $R_3$  represents optionally substituted phenyl.
133. The compound of claim 129, wherein  $R_5$  represents H or aralkyl.
134. The compound of claim 129, wherein n is 3.
135. The compound of claim 129, wherein X represents O; and R represents alkyl.
136. The compound of claim 129, wherein X represents O; and  $R_3$  represents optionally substituted phenyl.
137. The compound of claim 129, wherein X represents O; and  $R_5$  represents independently for each occurrence H or aralkyl.
138. The compound of claim 129, wherein X represents O; and n is 3.
139. The compound of claim 129, wherein X represents O; R represents alkyl; and  $R_3$  represents optionally substituted phenyl.
140. The compound of claim 129, wherein X represents O; R represents alkyl; and  $R_5$  represents independently for each occurrence H or aralkyl.
141. The compound of claim 129, wherein X represents O; R represents alkyl;  $R_3$  represents optionally substituted phenyl; and  $R_5$  represents independently for each occurrence H or aralkyl.
142. The compound of claim 129, wherein X represents O; R represents methyl;  $R_3$  represents 4-chlorophenyl;  $R_5$  represents independently for each occurrence H or triphenylmethyl; and n is 3.
143. A compound represented by J:



wherein

X represents O or S;

Y represents O or S;

R represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

R<sub>1</sub> represents -C(O)OR;

R<sub>2</sub> represents H;

R<sub>3</sub> represents optionally substituted aryl or heteroaryl;

R<sub>4</sub> represents H;

R<sub>5</sub> represents H, alkyl, alkoxy, alkylamino, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, alkoxycarbonyl, or alkylaminocarbonyl;

m is 1 or 2; and

n is 0, 1, or 2.

144. The compound of claim 143, wherein X represents O.
145. The compound of claim 143, wherein Y represents O.
146. The compound of claim 143, wherein R represents alkyl.
147. The compound of claim 143, wherein R<sub>3</sub> represents optionally substituted phenyl.
148. The compound of claim 143, wherein R<sub>5</sub> represents H, alkyl, or aralkyl.
149. The compound of claim 143, wherein m is 1.
150. The compound of claim 143, wherein X represents O; and Y represents O.
151. The compound of claim 143, wherein X represents O; and R represents alkyl.
152. The compound of claim 143, wherein X represents O; and R<sub>3</sub> represents optionally substituted phenyl.
153. The compound of claim 143, wherein X represents O; and R<sub>5</sub> represents H, alkyl, or aralkyl.
154. The compound of claim 143, wherein X represents O; and m is 1.



155. The compound of claim 143, wherein X represents O; Y represents O; R represents alkyl; and R<sub>3</sub> represents optionally substituted phenyl.
156. The compound of claim 143, wherein X represents O; Y represents O; R represents alkyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
157. The compound of claim 143, wherein X represents O; Y represents O; R represents alkyl; R<sub>3</sub> represents optionally substituted phenyl; and R<sub>5</sub> represents H, alkyl, or aralkyl.
158. The compound of claim 143, wherein X represents O; Y represents O; R represents methyl; R<sub>3</sub> represents 4-chlorophenyl; R<sub>5</sub> represents ethyl; and m is 1.
159. A complex, comprising a radionuclide; and a compound of claim 1, 15, 29, 43, 57, 75, 93, 111, 129, or 143.
160. The complex of claim 159, wherein the radionuclide is technetium.
161. A method of imaging brain tissue of a mammal, comprising the step of administering to a mammal a sufficient amount of a complex of claim 159.
162. The method of claim 161, wherein the radionuclide is technetium.
163. A method of imaging dopamine transporters in brain tissue of a mammal, comprising the step of administering to a mammal a sufficient amount of a complex of claim 159.
164. The method of claim 163, wherein the radionuclide is technetium.